

CLAIMS

What is claimed is:

1. A modular automation apparatus, comprising:
a base unit and an automation module;
said base unit providing predetermined control function, said base unit adapted to receive an automation module;
said automation module providing predetermined automation function, said automation module configured to mate with said base unit;
wherein when said base unit and said automation module are cooperatively assembled, the combination is capable of performing one or more predetermined automation functions.
2. The modular automation apparatus as recited in claim 1, wherein said automation module communicates electronically with said base unit.
3. The modular automation apparatus as recited in claim 2, wherein said automation module communicates with said base unit through an electrical conduit.
4. The modular automation apparatus as recited in claim 1, wherein said automation module comprises a frame having a platform.
5. The modular automation apparatus as recited in claim 4, wherein said platform includes at least one automation device disposed thereon.
6. The modular automation apparatus as recited in claim 4, wherein said automation module includes at least one selectively programmable memory device for storing information used to control said predetermined automation function.
7. The modular automation apparatus as recited in claim 6, wherein said information comprises at least one of automation specific logic rules and data.

8. The modular automation apparatus as recited in claim 6, wherein upon connection of said automation module to said base unit, the memory device downloads the stored information into said base unit.

9. The modular automation apparatus as recited in claim 1, wherein said predetermined control function provided by said base unit comprises the generation of signals required to operate said automation module.

10. The modular automation apparatus as recited in claim 1, wherein said base unit comprises a frame having a control cabinet affixed thereto.

11. The modular automation apparatus as recited in claim 10, wherein said control cabinet houses at least one control device.

12. The modular automation apparatus as recited in claim 11, wherein said control device comprises a programmable logic controller.

13. The modular automation apparatus as recited in claim 11, wherein said control device comprises a power supply capable of powering said base unit and said automation module.

14. The modular automation apparatus as recited in claim 10, wherein said control cabinet houses at least one automation specific control device.

15. The modular automation apparatus as recited in claim 14, wherein said automation specific control device comprises an automation device controller.

16. The modular automation apparatus as recited in claim 1, wherein said automation module includes a user interface.

17. The modular automation apparatus as recited in claim 16, wherein said user interface is configured to prompt a user to perform predetermined operation steps.

18. The modular automation apparatus as recited in claim 17, wherein said user interface is configured to accept user input responsive to prompting by said control unit.

19. The modular automation apparatus as recited in claim 16, wherein said user interface comprises a touch sensitive display.

20. The modular automation apparatus as recited in claim 16, wherein said predetermined control function provided by said base unit comprises the generation of control signals required to operate said user interface.

21. The modular automation apparatus as recited in claim 1, wherein said base unit further includes at least one safety device configured to prevent operation of said automation apparatus during a predetermined event.

22. The modular automation apparatus as recited in claim 21, wherein said safety device comprises a light curtain electronically controlled by said base unit, whereby when a user reaches through said light curtain into said automation module during said predetermined event, said base unit terminates operation of said automation module.

23. The modular automation apparatus as recited in claim 5, wherein said automation module includes a remote input-output device that communicates with said base unit for selectively controlling operation of said automation device.

24. The modular automation apparatus as recited in claim 1, wherein said predetermined automation function comprises manufacturing a product.

25. The modular automation apparatus as recited in claim 1, wherein said predetermined automation function comprises verifying a product.

26. The modular automation apparatus as recited in claim 1, further including a storage rack for storing automation modules awaiting connection to said base unit.

27. A modular automation apparatus, comprising:
a base unit and an automation module;

said base unit comprising a frame having a control cabinet affixed thereto that houses at least one programmable logic controller providing predetermined control function, said base unit adapted to receive an automation module;

said automation module comprising a frame having a platform upon which at least one automation device is disposed, a selectively programmable memory device for storing logic rules to control said predetermined automation function, and a remote input-output device that communicates with said programmable logic controller for selectively controlling operation of said automation device, said automation module configured to mate with said base unit; and

wherein when said base unit and a corresponding automation module are cooperatively assembled, said memory device downloads said logic rules into said programmable logic controller for execution, said programmable logic controller communicating with said remote input-output device in accordance with the executed logic rules to perform one or more predetermined automation functions.

28. A method of assembling an automation apparatus configured to perform one or more automation functions comprising:

providing an automation apparatus comprising a base unit providing predetermined control function and an automation module providing predetermined automation function, the automation module including at least one selectively programmable memory device for storing information to be transferred into the base unit, the automation apparatus capable of performing one or more predetermined

automation functions when said base unit and said automation module are cooperatively assembled;

assembling said automation module with said base unit to form a unitary automation apparatus; and

downloading the stored information from said memory device into said base unit.

29. The method according to claim 28, wherein the step of assembling the automation module with the base unit includes connecting an electrical conduit between the base unit and the automation module.

30. The method according to claim 28, wherein the stored information includes at least one of logic rules and data.